SANYO

No.2086B

2SB1204/2SD1804

PNP/NPN Epitaxial Planar Silicon Transistors

High-Current Switching Applications

Applications

· Relay drivers, high-speed inverters, converters, and other general high-current switching applications

Features

· Low collector-to-emitter saturation voltage
· High current and high f_T
· Excellent linearity of h_{FE}
· Fast switching time
· Small and slim package making it easy to make 2SB1204/2SD1804-applied sets smaller

( ) : 2SB1204

Absolute Maximum Ratings at Ta = 25°C

				unit
Collector to Base Voltage	V_{CBO}		(−)60	V
Collector to Emitter Voltage	V_{CEO}		(−)50	V
Emitter to Base Voltage	V_{EBO}		(−)6	V
Collector Current	I_C		(−)8	A
Collector Current(Pulse)	I_{CP}		(−)12	A
Collector Dissipation	P_C		1	W
		Tc = 25°C	20	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta = 25°C

			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	V_{CB} = (−)40V, I_E = 0			(−)1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB} = (−)4V, I_C = 0			(−)1	μA
DC Current Gain	$h_{FE}(1)$	V_{CE} = (−)2V, I_C = (−)0.5A	70※		400※	
	$h_{FE}(2)$	V_{CE} = (−)2V, I_C = (−)6A	35			
Gain-Bandwidth Product	f_T	V_{CE} = (−)5V, I_C = (−)1A		180 (130)		MHz
Output Capacitance	c_{ob}	V_{CB} = (−)10V, f = 1MHz		(95)65		pF

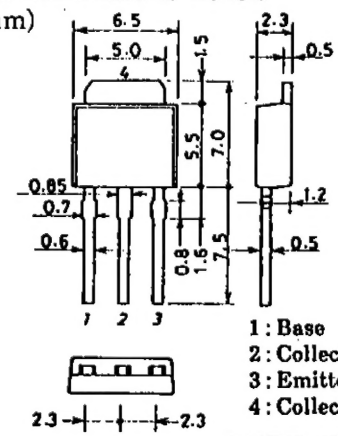
Continued on next page.

※ : The 2SB1204/2SD1804 are classified by 0.5A h_{FE} as follows :

70 Q 140	100 R 200	140 S 280	200 T 400

Package Dimensions 2045B

(unit : mm)

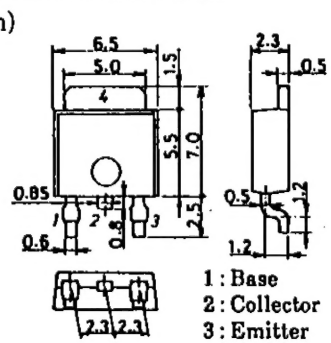


1 : Base
2 : Collector
3 : Emitter
4 : Collector

SANYO : TP

Pckage Dimensions 2044B

(unit : mm)



1 : Base
2 : Collector
3 : Emitter
4 : Collector

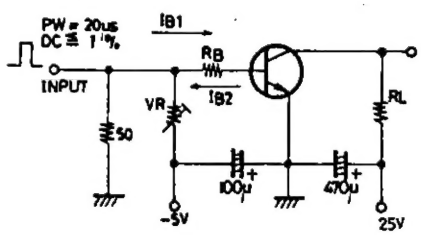
SANYO : TP-FA

SANYO Electric Co., Ltd. Semiconductor Business Headquarters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

Continued from preceding page.

			min	typ	max	unit
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)4A, I_B=(-)0.2A$		200	400	mV
				(−250)	(−500)	
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)4A, I_B=(-)0.2A$		(−)0.95	(−)1.3	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(−)60			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(−)50			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(−)6			V
Turn-on Time	t_{on}	See specified Test Circuit.		(50)		ns
Storage Time	t_{stg}	〃		(450)500		ns
Fall Time	t_f	〃		20		ns

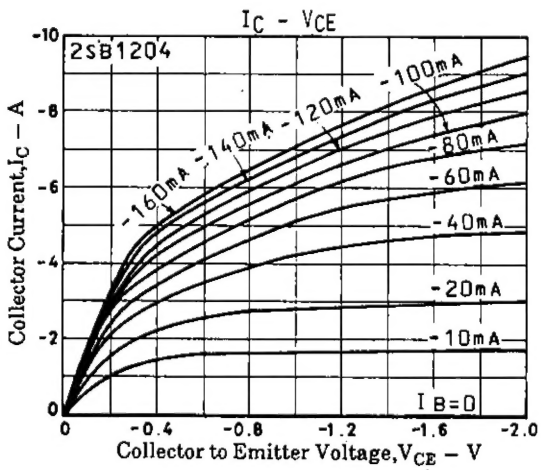
Switching Time Test Circuit

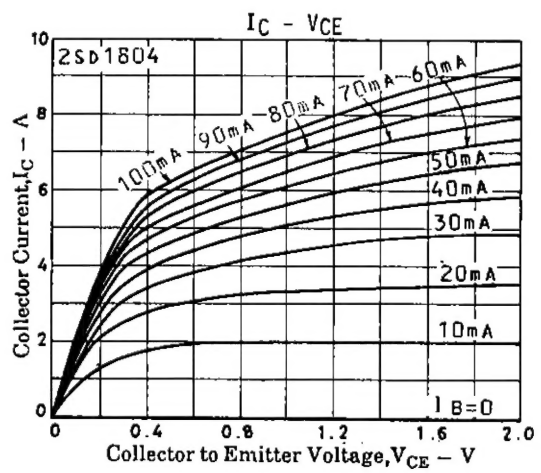


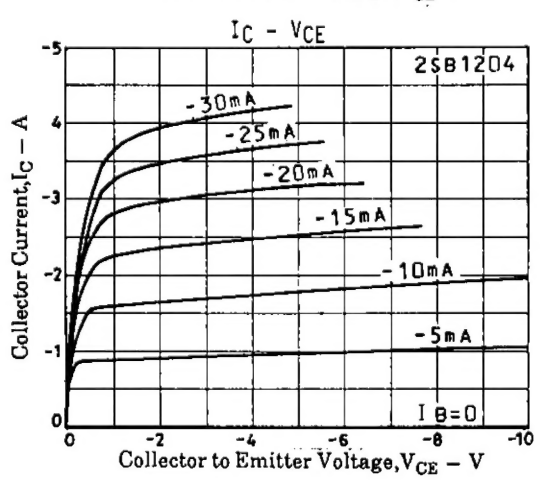
I C=10 I B1=-10 I B2=4A

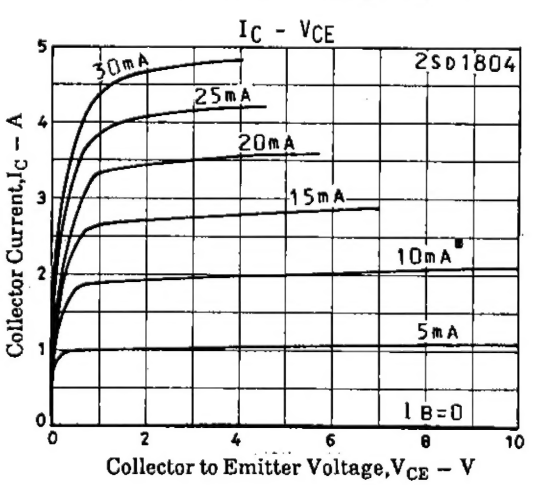
(For PNP, the polarity is reversed.)

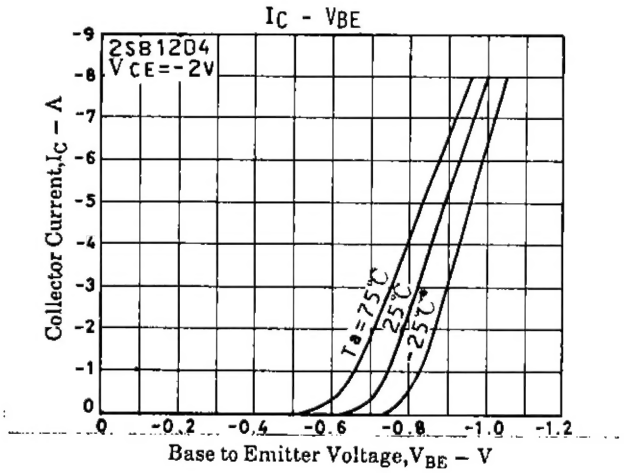
Unit (Resistance : Ω, Capacitance : F)

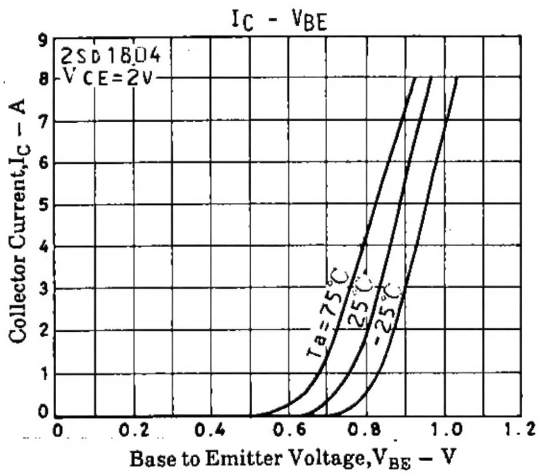


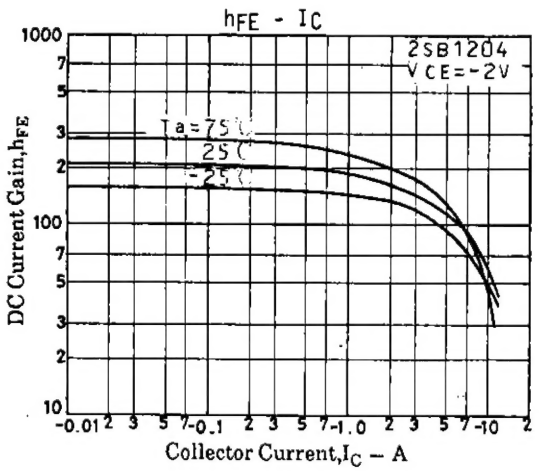


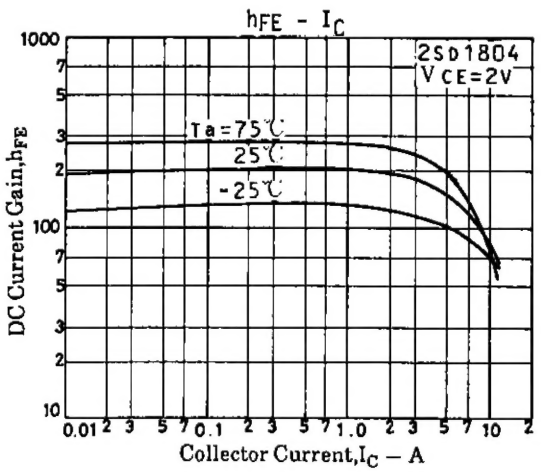


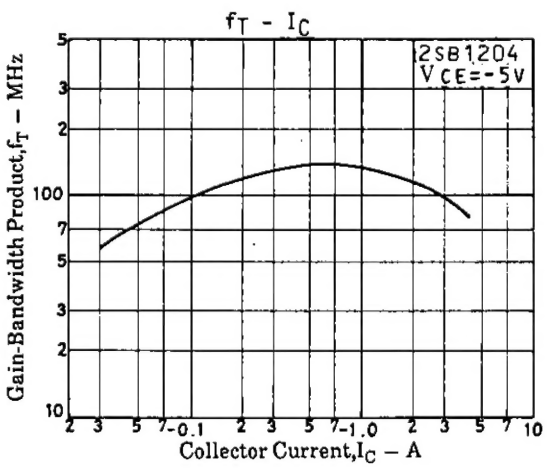


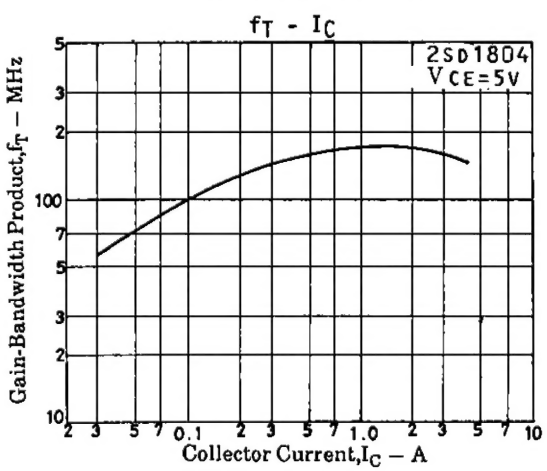

IC - VBE
2SB1204
VCE=-2V
Ta=75℃
25℃
-25℃
Collector Current,IC – A
Base to Emitter Voltage,VBE – V

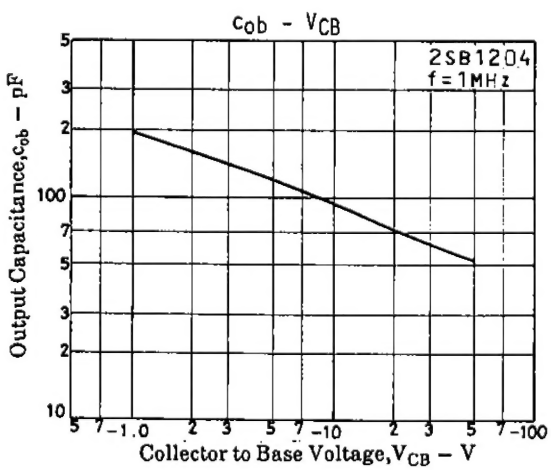

IC - VBE
2SD1804
VCE=2V
Ta=75℃
25℃
-25℃
Collector Current,IC – A
Base to Emitter Voltage,VBE – V

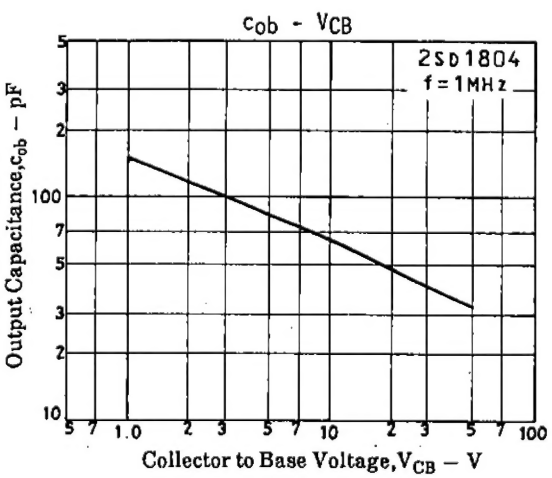

hFE - IC
2SB1204
VCE=-2V
Ta=75℃
25℃
-25℃
DC Current Gain,hFE
Collector Current,IC – A


hFE - IC
2SD1804
VCE=2V
Ta=75℃
25℃
-25℃
DC Current Gain,hFE
Collector Current,IC – A


fT - IC
2SB1204
VCE=-5V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – A


fT - IC
2SD1804
VCE=5V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – A


Cob - VCB
2SB1204
f=1MHz
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V


Cob - VCB
2SD1804
f=1MHz
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V